

**UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK**

**IN RE METHYL TERTIARY BUTYL ETHER  
(MTBE) PRODUCTS LIABILITY LITIGATION**

Master File No. 1:00-1898  
MDL 1358 (SAS)  
M21-88

This document relates to:

*Commonwealth of Puerto Rico, et al. v. Shell Oil Co., et al.*, No. 07-CV-10470

**DECLARATION OF ANTHONY BROWN  
IN SUPPORT OF PLAINTIFF'S OPPOSITION TO CHEVRON PUERTO RICO, LLC'S  
MOTION FOR SUMMARY JUDGMENT RE NO INJURY AT TEXACO # 800**

I, Anthony Brown, hereby declare as follows:

1. I am an expert with 25 years of experience in groundwater hydrology, contaminant fate and transport, remediation of contaminated sites, and drinking water treatment. My experience includes, among other activities, contaminant site investigations, hydrogeologic characterization studies, modeling the fate and transport of contaminants, regulatory standards, including regulations pertaining to contamination of groundwater, and the design, planning, permitting, costing, and implementation of remedial actions, aquifer restoration programs, and drinking water treatment systems.

2. I have been retained by legal counsel for Plaintiff the Commonwealth of Puerto Rico through the Environmental Quality Board ("EQB") to testify concerning gasoline releases containing fuel oxygenates, specifically methyl tertiary butyl ether ("MTBE") and tertiary butyl alcohol ("TBA"), and their impacts on groundwater resources in Puerto Rico.

3. I have reviewed the Motion and Memorandum for Summary Judgment of Chevron Puerto Rico, LLC Regarding No Injury at the Texaco #800 Service Station ("Motion") and the documents in support of that Motion, including Chevron Puerto Rico, LLC's ("Chevron") Rule 56.1 Statement, and the declarations and exhibits associated with the Motion.

4. I have also reviewed information about the Texaco #800 trial site (the "Site" or "Texaco #800") obtained from the EQB, produced by the defendants, and/or publically available in databases and publications. In addition, I have reviewed and analyzed information relating to the history of releases at the site, hydrogeologic conditions, environmental investigation and remedial activities conducted by the defendants, the magnitude and extent of contamination at, and in the vicinity of, the Site, contaminant fate and transport, and the threat to nearby receptors,

notably water supply wells. In examining the nature, magnitude, and extent of the contamination, I developed a conceptual site model that considers contaminant sources, pathways, and receptors. I also prepared a feasibility study and developed an appropriate course of action for future remedial activities at the Site.

5. On-going MTBE contamination exists in groundwater beneath Texaco #800.

(Revised Expert Report of Anthony Brown, April 2014, p. 123) (hereinafter “Brown Report (April 2014)”). Initial testing for MTBE in groundwater at the Site was performed in December 2009. That testing detected MTBE at a concentration of 10,900 ug/L in a sample collected from MW-103, a monitoring well screened from 20 to 35 feet below ground surface (“bgs”). (The screen length of a well is the subsurface part of the well that is perforated, or open to the geologic formation, to allow groundwater to be drawn into the well when it is pumped.)

6. MTBE concentrations at the Site continued to increase to the maximum historical concentration of 15,500 ug/L detected in MW-103 in September 2010. MTBE has been consistently detected thereafter, and the current maximum MTBE concentration in groundwater beneath the Site, detected during the groundwater sampling conducted in February 2014, is 5,450 ug/L (MW-103). (Addendum to Revised Expert Report, May 2014, Tbl. 5.1 (hereinafter “Brown Addenda (May 2014)”). Even that concentration is lower than the actual maximum concentration in groundwater in the vicinity of Texaco #800 because Chevron placed “ORC socks” in monitoring wells MW-101, MW-102, MW-103, MW-104, MW-201, MW-202, MW-203, and MW-204 in 2011. (Brown Addenda (May 2014), p. 2). ORC socks create a chemical environment that is intended to reduce the concentration of contaminants in the well. Thus, samples obtained from these wells after the placement of ORC socks *understate* the concentrations

of MTBE in groundwater in the vicinity of Texaco #800. The actual maximum MTBE concentration in the groundwater in the vicinity of Texaco #800 is higher than the reported concentrations in samples from these wells.

7. MTBE released at Texaco #800 has migrated in groundwater off-Site. As noted in the Brown Report (April 2014): “Based upon the available data, the pathway for releases of MTBE, TBA, and benzene from the Site to impact groundwater is complete” and “[g]roundwater beyond the boundaries of the Site has been impacted by BTEX, MTBE and TBA in a contiguous plume emanating from the Site.” (Brown Report (April 2014), pp. 128-129.)

8. MTBE has been detected in groundwater down-gradient and off-Site to the maximum depths sampled of 39 feet (GP3), 45 feet (B-7), and 49 feet (B-1). (Brown Addenda (May 2014), Tbl. 5.1; SUN\_PUERTO\_ZEEB 001236 (indicating sample at B-1 was taken at 49 feet bgs)). No deeper groundwater samples have been collected in the area of the Site. Sample location B-1 is 400 feet down-gradient to the south-southwest of the Site. Chevron has not yet delineated the lateral and vertical extent of MTBE contamination beneath, or down-gradient of, the Site. (Brown Addenda (May 2014), p. 13.)

9. Among the materials I reviewed in developing, reporting on, and testifying about my opinions in this case are several water supply well databases, including databases maintained by the U.S. Geological Survey (“USGS”), Puerto Rico Department of Health (“PRDOH”), and Puerto Rico Aqueduct and Sewer Authority (PRASA). Defense experts also relied on these databases, as well as additional databases including the National Water Quality Monitoring Council database. The databases provide information regarding, among other things, the location, site use, and status (e.g., active, inactive, etc.) of water supply wells in the vicinity of the

Site. It is my understanding that the USGS database is regularly updated and accurately reflects the location, site use, and status of the many water supply wells within and outside of the Court-ordered delineation boundary for Texaco #800.

10. Defendants make four primary arguments: (1) Texaco #800 has not contaminated Class SG-1 Groundwater; (2) the San Anton North well does not exist; (3) there is no evidence the Belgica well exists; and (4) I rely on well-bore leakage to transport contamination between the shallow and deeper groundwater. Defendants are mistaken on all four points.

11. First, defendants contend that “the only relevant question is whether there is credible evidence that MTBE from Texaco #800 has reached, or will reach, Class SG-1 Groundwater or water that acts as a source” and then assert there is no evidence that MTBE from Texaco #800 has impacted or will impact Class SG-1 Groundwater. This is incorrect. As acknowledged by Chevron, Class SG-1 Groundwater is groundwater that has been, is being, *or is intended to be “used for drinking water or irrigation.”* (Motion, p. 10; 56.1 ¶ 1.) There are three primary lines of evidence that support the fact that the groundwater contaminated by releases at Texaco #800 *is* Class SG-1 Groundwater. First, the contaminated groundwater is hydraulically connected to deeper groundwater, and it is part of one aquifer system – the South Coast Aquifer. Second, the San Anton North well, located approximately 100 feet to the south-southeast of the Site, withdraws, has withdrawn, and/or will withdraw groundwater from the same depth at which contamination has already been detected beneath Texaco #800. Third, public water supply wells in the vicinity of the Site have screened intervals that extend to a depth at which contamination has already been detected beneath Texaco #800.

11.1. As noted in the Brown Report (April 2014) and at my deposition, the

shallow and deeper saturated zones beneath Texaco #800 are hydraulically connected. In fact, shallow and deeper groundwater beneath Texaco #800 are part of the same aquifer system – the South Coast Aquifer. There are no contiguous aquicludes or aquitards that divide the South Coast Aquifer into discrete water bearing strata or isolate deeper groundwater from shallow groundwater in the vicinity of Texaco #800. The absence of aquicludes or aquitards is depicted in the geologic cross section titled “N1-S1” in the USGS 2005 document attached hereto as Exhibit A (SUN\_PUERTO\_ZEEB 002106). (Please note that this cross-section is mislabeled on Plate 1 of this USGS document as N2-S2, but the error is readily corrected by matching up well designations on the cross-section). This cross section, which extends to a depth of 200 feet bgs, shows there are no laterally continuous aquitards or aquicludes that would prevent vertical downward movement of groundwater. The absence of aquicludes and aquitards creates a singular groundwater body, which is confirmed by Wanda Garcia Hernandez of EQB, who declares in opposition to the Motion that EQB (like USGS) considers the shallow and deeper groundwater to be in hydraulic communication and part of a single aquifer – the South Coast Aquifer. The shallow groundwater beneath Texaco #800, where MTBE has already been detected, is itself Class SG-1 Groundwater.

11.2. As discussed in the Brown Report (April 2014) and at my deposition (Brown Depo., May 22, 2014, p. 165:9-20), the San Anton North well is located approximately 100 feet south-southeast of the Site and is completed to a total depth of 61 feet bgs. At a minimum, an irrigation well such as San Anton North has a likely screened interval of 20 feet, meaning the San Anton North well withdraws groundwater for

irrigation purposes from 41 feet bgs, and likely shallower. As noted in paragraph 8 above, MTBE released at the Site has contaminated groundwater to a depth of *at least* 49 feet bgs, at sample location B-1, which is *farther from* the Site than San Anton North (meaning MTBE from Texaco #800 has already migrated in groundwater farther from the Site than the distance to San Anton North). As I testified at my deposition, the capture zone for San Anton North extends into the known area of contamination beneath Texaco #800. (Brown Depo., May 22, 2014, p. 172:2-19). Thus, MTBE from Texaco #800 has contaminated ground waters that are, have been, and/or are intended to be used for irrigation purposes. MTBE releases at the Site have contaminated Class SG-1 Groundwater.

11.3 A USGS 2005 document (Surface-Water, Water-Quality, and Groundwater Assessments of the Municipio of Ponce, Puerto Rico, 2002-2004, p. 54), provides that the screened interval for the down-gradient public drinking water supply well Restaurada 8 is 20 to 130 feet bgs. Ex. A (SUN\_PUERTO\_ZEEB 002091). Restaurada 8 draws groundwater from a depth as shallow as 20 feet bgs and contamination has been detected in groundwater beneath Texaco #800 at even greater depths (up to 49 feet bgs). Thus, Restaurada 8, like San Anton North, draws groundwater from a depth at which MTBE from Texaco #800 has been detected. The shallow groundwater contaminated by Texaco #800 is therefore Class SG-1 Groundwater that has been or is intended to be used as drinking water. (Motion, p.10; 56.1 ¶ 1 [Class SG-1 Groundwater is groundwater that has been, is being, *or* is intended to be “*used for drinking water or irrigation.*”].)

12. Second, defendants contend the San Anton North well does not exist. This is incorrect and contradicts the testimony of defendants’ own expert. The San Anton North well is a

documented active irrigation well according to both the USGS (USGS, 2011) and defense expert Dr. Peter Zeeb (Sun\_Puerto\_Zeeb 019189). According to USGS and Dr. Zeeb, the well is in service and withdrawing groundwater. (Sun\_Puerto\_Zeeb 0191189 [indicating Site Use is “WITHDRAWAL” and Well Status is “In Service”].)

12.1. The USGS database on which Dr. Zeeb, defense expert John Connor, and I relied locates the San Anton North well approximately 100 feet south-southeast of the Site. That location puts the well in a private residential yard surrounded by a wall and not publicly accessible. The well was not located during a brief field survey conducted on my behalf, but that is not evidence the well does not exist. The USGS database provides that the well is an active irrigation well. There is no evidence the well has been abandoned or destroyed. When Mr. Connor was asked whether MTBE from the Site could reach the San Anton North well, he acknowledged it could: “BY MR. MILLER: Would MTBE from the site potentially reach that well? THE WITNESS: . . . . [T]he concentration at that location could be a detectable concentration . . . .” (Connor Depo., July 3, 2014, pp. 346:19-25, 347:1-19.) There is evidence to support the conclusion that San Anton North is an active irrigation well capturing MTBE from the Site.

12.2. Defendants also claim that the location of the San Anton North well is a “moving target” because my January 2014 report located the well southwest of the Site. (Motion, p. 7.) Defendants fail to acknowledge that this was merely a typographical error and the correct location of San Anton North was identified in my January 2014 report and again in the Brown Report (April 2014), both prior to my deposition. (Expert Report of Anthony Brown (January 2014), Fig 5.3).



13. Third, defendants contend there is no evidence the Belgica well exists or has ever existed. This is not correct. There are two sources of evidence that the Belgica well exists and has existed. The Belgica well is listed as a public water supply well in two government databases. The USGS database locates the well at Northing: 18.003605 and Easting: 66.607895. The PRDOH database locates the well at Northing: 18.004133 and Easting: 66.599895. The USGS database coordinates place the Belgica well approximately 2,500 feet southwest of the Site. The PRDOH database coordinates place the well approximately 1,000 feet south-southeast of the Site, which is where I initially placed the well in performing groundwater modeling.

13.1. While the Belgica well was not visually located at the PRDOH coordinates during the brief field survey conducted on my behalf, that is not evidence that the well does not exist. In my deposition on May 22, 2014, I clarified the evidence supporting the Belgica well as modeled: “MR. CORRELL: So based upon your experience and expertise, it would be improper to model this well because it can't be located, and there's no records to justify pumping rates; correct? MR. MASSEY: Objection. Compound, argumentative. THE WITNESS: No, that would not be correct. We understood based on the information we had that there was a public supply well at that location. Therefore, that is why we modeled it as such. We didn't have any indication that there was no such water supply well.” (Brown Depo., May 22, 2014, pp. 139:20-25, 140:1-22.) The PRDOH database is evidence the Belgica well exists as modeled.

14. Fourth, defendants assert that I rely solely on contamination that has leaked down a well-bore, notably at the San Anton North well, to impact deeper groundwater in the regional aquifer – the South Coast Aquifer. Defendants also assert I have “no evidence that MTBE from

Texaco #800 has reached the ‘South Coast Aquifer,’ which is where Class SG-1 Groundwater is found at the Texaco #800 site.” (Motion, p. 3.) Defendants further assert that I “acknowledge that, for MTBE from Texaco #800 to impact the South Coast Aquifer, there must be ‘some form of vertical communication between the contaminated shallow zone and the deeper zone,’” and that I do not identify any “reliable data indicating the existence of” vertical communication between the contaminated shallow zone and the deeper zone. (*Id.* at 4.) Defendants finally assert that I cannot “conclude that it is more likely than not that water in the shallow aquifer around Texaco #800 is acting as a source for Class SG-1 Groundwater.” (*Id.* at 1.) Each of these assertions is incorrect.

14.1. As discussed above and in the Declaration of Wanda Garcia Hernandez, the shallow and deeper groundwater at Texaco #800 are part of one aquifer system called the South Coast Aquifer (see paragraph 11 and sub-paragraphs 11.1 and 11.2 above). There are no contiguous aquicludes or aquitards that isolate the shallow groundwater from deeper groundwater in the South Coast Aquifer in the area of Texaco #800.

14.2. Even if the shallow and deeper groundwater beneath Texaco #800 were not part of the same aquifer, any well-bore leakage, such as well-bore leakage at the Cuatro Calles 5 well approximately 100 feet south-southwest of Texaco #800, facilitates and expedites the movement of contaminants from shallow to deeper groundwater. However, well bore leakage is not the sole mechanism for contamination to migrate from shallow groundwater (including the Class SG-1 groundwater contaminated by Chevron’s MTBE at Texaco #800) to deeper groundwater. As stated in the Brown Report (April 2014) and above, no documented aquicludes or aquitards in the area of the Site prohibit the migration

of groundwater (and contamination therein) from shallow to deeper groundwater. (Brown Report (April 2014), p. 131 [“In most areas, no competent aquitard is present between first groundwater and the regional aquifer, and the first groundwater is likely in hydraulic communication with the underlying regional aquifers.”].)

14.3. Defendants also argue that my model assumes the San Anton North and Belgica wells “do not have sanitary seals and that, as a consequence, there is communication between the shallow groundwater and the South Coast Aquifer,” and that this “assumption is essential to Brown’s model, but Plaintiffs and Brown have no evidence to support it.” (Motion, pp. 5-6, 9.) This assumption is not essential to my model. As noted above, there is ample evidence that the MTBE-contaminated groundwater beneath Texaco #800 is in hydraulic communication with, and is in fact part of, the South Coast Aquifer. Further, the existence and condition of sanitary seals on San Anton North, Belgica, and other public supply wells in the area of the Site is uncertain. At my deposition, when asked how leaks occur as a result of sanitary seals, I explained that a seal may not extend all the way down to the deeper production zone, which is a problem commonly seen in older wells. I also testified that the seal itself may not bond between the casing and the geologic formation and, as a result, there may be leakage along the well bore. (Brown Depo., May 23, 2014, at pp. 361:5-362:3.) Given the age of the San Anton North and Belgica wells, it is likely that they do not have competent sanitary seals that isolate shallow groundwater from deeper groundwater.

15. It is my opinion, as expressed in the Brown Report (April 2014), that MTBE released at Texaco #800 will continue to migrate unabated, in the absence of effective remedial

actions, and threatens deeper groundwater. (Brown Report (April 2014), p. 135 [“Releases threaten deeper groundwater within the South Coast Aquifer.”]).

16. Defendants argue that I identify only two wells in my model that are threatened by the releases at Texaco #800. This is, again, incorrect. The modeling I conducted illustrates how capture zones for a variety of wells can extend beneath an area of contamination, and “pull” MTBE from beneath Texaco #800 site in the direction of the well. Ex. B (Attachment E: Rebuttal Report of Anthony Brown to Expert Report of Dr. Peter Zeeb (May 2014), p. 8). I did not state that only two wells have been impacted or will be impacted by contamination at the Site. I made clear in my testimony that if the San Anton North or Belgica wells do not exist, or are not pumping, the capture zones for other water supply wells will extend beneath and/or into the known area of contamination at Texaco #800. (Brown Depo., May 22, 2014, pp. 192:9-13, 190:20-192:13 [full discussion]); (Brown Report (April 2014), p. 129 [“Once in the South Coast Aquifer, the contamination will be drawn directly to nearby water supply wells.”]). That is, absent pumping at the San Anton North or Belgica wells, groundwater will flow to the next down-gradient water supply well(s).

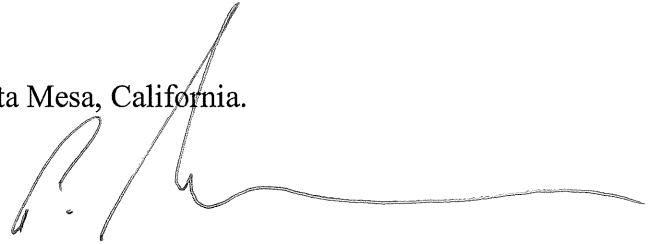
17. I modeled such a scenario, but the Court excluded it *prior to* Chevron challenging whether Texaco #800 reaches any public supply well. That modeling demonstrated that if pumping at Belgica were to stop, the capture zone for the Costa Caribe public drinking water supply well southeast of the Site will extend beneath the known area of contamination. Costa Caribe is one of eight public water supply wells (two not in use), four domestic water supply wells, eight irrigation water supply wells, three institutional water supply wells, and three industrial water supply wells that I concluded were threatened by the releases from Texaco #800. As I

testified, there is no question MTBE from Texaco #800 will reach the capture zone of a public water supply well. The only question is which well(s).

18. To conclude, as explained in the Brown Report (April 2014), “[i]n the absence of active remediation, the migration of contaminants in groundwater notably MTBE and TBA, given their fate and transport properties, will continue unabated.” (Brown Report (April 2014), p. 129). Absent active remediation, MTBE and TBA from Texaco #800, all of which is in the Class SG-1 Groundwater of the South Coast Aquifer, will continue to migrate unabated towards a point of discharge – likely one of many water supply wells in the vicinity of the Site. Therefore, releases from the Site have impacted Class SG-1 Groundwater, threaten deeper groundwater within the South Coast Aquifer, and threaten water supply wells.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed this 7th day of November 2014, at Costa Mesa, California.

A handwritten signature in black ink, appearing to read 'Anthony Brown', written over a horizontal line.

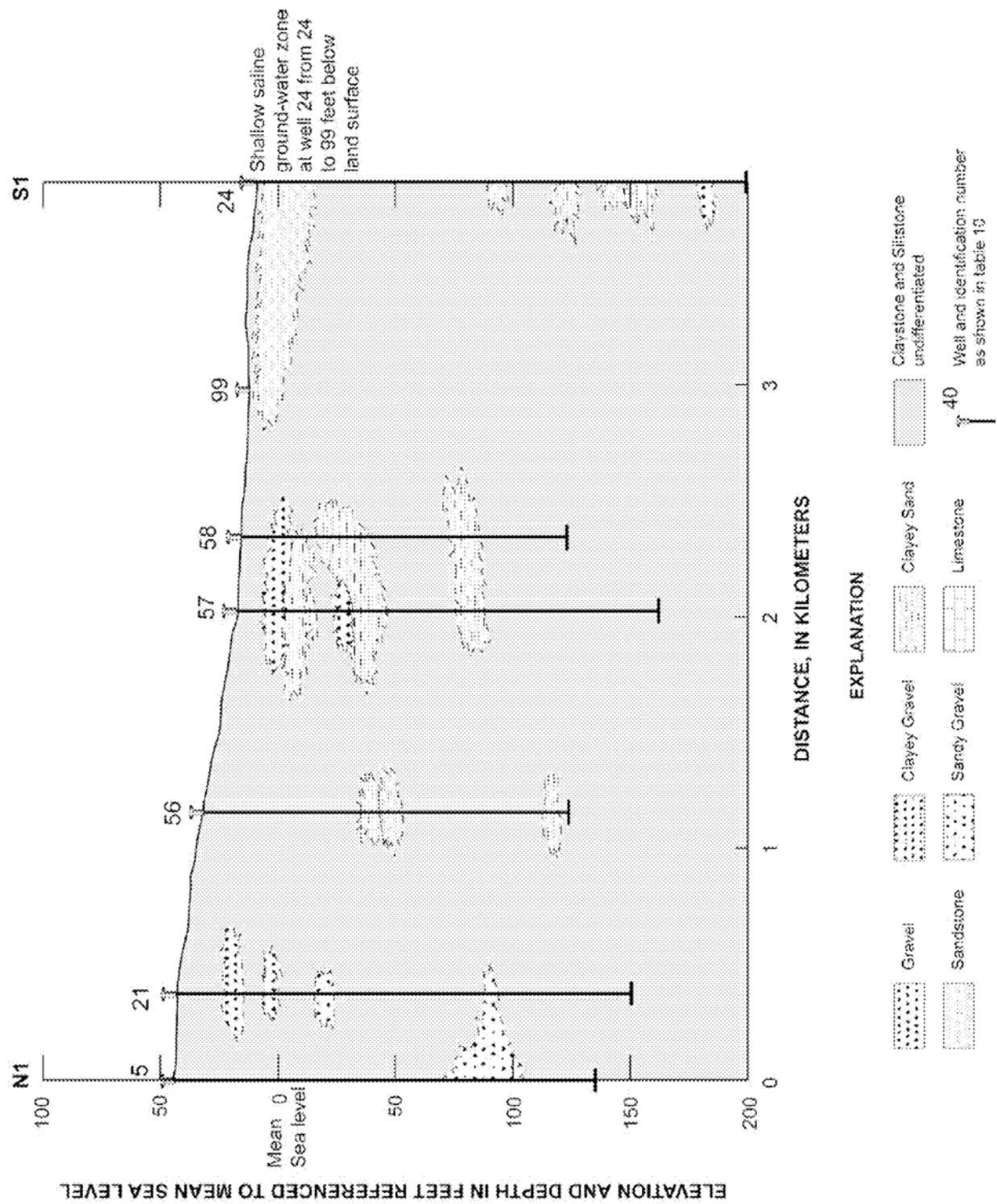
Anthony Brown

Exhibit A

**54 Surface-Water, Water-Quality, and Ground-Water Assessment of the Municipio of Ponce, Puerto Rico, 2002-2004****Table 10.** Description of wells used to evaluate the geology, hydrogeology, and ground-water quality in the municipio of Ponce.—Continued

Well name and identification number	Site identification number <sup>1</sup>	Use	Depth, in feet below land surface	Depth of screen, casing or open hole interval (feet below land surface)	Land surface elevation (feet above mean sea level) (**)
36. Auger TW3	175907663526	AB	55.5	---	6
37. Auger TW4	175907663526	AB	34.5	---	16
38. Auger TW5	17595066531	AB	51	---	20
39. Restaurada 8B	175940663543	USGS OBS	170	20-130	19
40. Indian Head	175957663657	AB	150	38-150	21
41. Constancia 9	175948663646	AB	185	---	20
42. Constancia 2	175918663638	AB	---	---	24
43. Constancia 1	175902663614	AB	---	---	10
44. Constancia 3	175934663648	USGS OBS	150	0-150	16
45. Wilo 1	175957663651	AB	125	20-125	23
46. Iron Work 2	175906663711	AB	---	---	7
47. Ruiz Belvis (PRASA)	175913663712	AB	160	30-160	8
48. Oliver	175924663707	AB	178	0-158	11
49. Saurí 2	175930663702	AB	185	---	10
50. Matilde 2	180030663844	AB	160	---	56
51. Reparada	180030663821	AB	---	---	43
52. Angola 1	180052663900	AB	300	---	131
53. Ponce Cement #4	180107663822	IND	120	---	66
53a. Ponce Cement #2	180110663821	IND	266	---	62
54. Sucesión Serrallés 2	180111663839	AB	175	---	66
55. Angola 2	180102663907	AB	200	---	66
56. Colonia Santa Cruz	175956663558	AB	160	8-160	31
57. Restaurada 9 (PRASA)	175932663543	PWS	170	20-170	17
58. Restaurada 10 (PRASA)	175924663542	PWS	130	20-130	15
59. Luchetti	175950663605	AB	200	---	23
60. Restaurada 5 (PRASA)	175949663526	PWS	130	20-130	18
61. Restaurada 1 (PRASA)	175948663511	PWS	170	21-130	16
62. Fagot 2	180156663653	AB	75	0-45	98
63. Mercedita Norte	180126663355	AB	582	---	131
64. Zapater 1	180054663643	AB	115	49-60	54
65. Pietri 1	180035663658	AB	120	41-120	38
66. Toro 1	180026663649	AB	496	0-500	33
67. José Tormos	180009663646	AB	100	20-100	30
68. Mesa	175933663705	AB	150	---	10
69. UPR (PRASA)	175952663622	PWS	---	---	23
70. Santa María	180024663712	PWS	---	---	26
71. Fagot	180108663558	PWS	---	---	69
72. Restaurada 8 (PRASA)	175950663538	PWS	130	20-130	23





**Figure 9a.** Geologic cross sections showing subsurface distribution of main lithologies along line of section N1-S1. Line of section shown in plate 2.



Exhibit B



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# ATTACHMENT E: REBUTTAL REPORT OF ANTHONY BROWN To Expert Report of Peter Zeeb

Prepared on behalf of:  
The Law Office of John K. Dema, P. C.  
Orlando H. Martinez Law Offices  
Miller, Axline & Sawyer  
Jackson Gilmour & Dobbs P.C.

Project No.: 007-02

May 2014



concentrations exist within the aquifer, especially closer to the release location (Aquilologic, 2014, p. 161).

## **1.4 Mr. Brown's Modeling Approach is Misleading and Based Largely on Speculation**

### **Statement**

*"Mr. Brown's models simulate two dimensional flow, and do not incorporate any transport processes other than advection. Model parameters are relatively uniform from site to site and well to well with many values based on literature or speculation, ignoring data from the Trial Sites" (Zeeb, 2014, p. 4).*

### **Rebuttal to Statement**

Given the available dataset, a two-dimensional model is sufficient. For a two-dimensional model, certain assumptions on hydrogeologic conditions have to be made as some of the hydrologic data needed has not been collected at the trial sites. For a three-dimensional model, a far greater number of assumptions would need to be made, with no guarantee that a three-dimensional model would be more representative of actual conditions. The intent of the modeling was to demonstrate that capture zones exist whereby particles beneath the known area of contamination would eventually reach a water supply well. The analytical modeling achieved that goal, and the capture zones indicated in the modeling are reasonable representations of actual conditions.

### **Statement**

*"Model stratigraphy and most groundwater flow parameters are generic, especially in the deep zone where input values for model parameters are identical for all sites. A summary of Mr. Brown's input parameters is included in Table 1. Hydraulic conductivity values in the shallow zone are not derived from hydraulic testing but rather are assumed values based on boring logs indicating the aquifer is primarily silty or clayey sand. The basis of hydraulic conductivity in the deep zone models is the simply the presumption that hydraulic conductivity is greater in zones screened by supply wells" (Zeeb, 2014, p. 5).*

### **Rebuttal to Statement**

Hydraulic conductivity data has not been collected at most of the trial sites. At some sites, hydraulic conductivity values have been reported. However, the data is suspect and was disclosed after the fact discovery cut-off date of December 20, 2013. Given the absence of data or presence of only suspect data, I used hydrologic judgment to estimate hydraulic conductivity based on the soil types observed in borings. It is reasonable to assume that hydraulic conductivity values would be higher in the deeper hydrogeologic units from which water supply wells pump groundwater. Given this, the capture zones indicated in the modeling are reasonable representations of actual conditions. Changing hydraulic conductivity values would

**PROOF OF SERVICE VIA LEXISNEXIS FILE & SERVE**

*Commonwealth of Puerto Rico, et al. v. Shell Oil Co., et al.*, United States District Court,  
Southern District of New York Case No. No. 07 Civ. 10470 (SAS)


I, the undersigned, declare that I am, and was at the time of service of the paper(s) herein referred to, over the age of 18 years and not a party to this action. My business address is 1050 Fulton Avenue, Suite 100, Sacramento, CA 95825-4225.

On the date below, I served the following document on all counsel in this action electronically through LexisNexis File & Serve:

**DECLARATION OF ANTHONY BROWN IN SUPPORT OF PLAINTIFF'S  
OPPOSITION TO CHEVRON PUERTO RICO, LLC'S, MOTION FOR SUMMARY  
JUDGMENT RE NO INJURY AT TEXACO # 800**

I declare under penalty of perjury under the laws of the United States of America and the State of California that the foregoing is true and correct.

Executed on November 7, 2014, at Sacramento, California.

  
KATHY HERRON